

INITIAL
NAVY TRAINING SYSTEM PLAN
FOR THE
AIR DATA TEST SET
FEBRUARY 1998

Enclosure (1)

AIR DATA TEST SET

EXECUTIVE SUMMARY

This Initial Navy Training System Plan for the Air Data Test Set (ADTS) was developed by the Naval Air Systems Command using the HARDMAN Methodology for Equipment, System, and Subsystem. This document provides an early estimate of the manpower, personnel, and training requirements needed to support and sustain the ADTS upgrade program. It also contains appropriate data required to make accurate decisions and assessments concerning design and manning alternatives for the ADTS. The ADTS upgrade program is currently in Phase III, Production, Deployment, and Operational Support Phase, of the Weapon System Acquisition Process. This program is designated as an Acquisition Category III program.

The ADTS upgrade program is a replacement for the TTU-205 C/E Test Set currently in use by the Navy and Marine Corps. The ADTS will be used by Navy and Marine Corps personnel aboard aircraft carriers and shore stations for organizational and intermediate level maintenance and operational testing. It is designed to test air speed indicators, altimeters, and other air data systems on all Navy and Marine Corps aircraft. It will consist of a main unit, remote unit, pneumatic hose assemblies, and electrical cable assemblies.

The maintenance concept is envisioned to be two-level, intermediate and depot level maintenance. Repairs of the sub-assemblies will be performed by Aircraft Intermediate Maintenance Departments. As a minimum, the intermediate level will be able to fault locate, remove, and replace faulty sub-assemblies and calibrate the ADTS. Depot level repairs will be accomplished by commercial contract.

The manpower requirements for the ADTS upgrade are well within the capabilities of the Navy's existing rating structure. Because of its similarity to the predecessor system, the TTU-205C/E, no change to existing manning will be required. Operation of the ADTS at the organizational level will be performed by currently assigned Navy Aviation Electronics Technicians (AT), Navy Aviation Electrician's Mates (AE), and Marine Corps Aircraft Electrical Systems Technicians with Navy Enlisted Classifications (NEC) and Military Occupational Specialty (MOS) codes related to the specific aircraft platforms. Corrective maintenance will be performed at the intermediate level by Navy ATs with NEC 6673 and Marines with MOS 6462.

The ADTS upgrade follow-on (replacement) training program will consist of operator and maintenance training. Because of its simplicity, activity operators will be trained via the On-the-Job Training. If necessary, local Naval Aviation Engineering Service Unit (NAESU) personnel can provide more in-depth training. Maintenance training requirements will be satisfied by existing intermediate level calibration courses.

AIR DATA TEST SET
TABLE OF CONTENTS

	Page
Executive Summary.....	i
List of Acronyms.....	iii
Preface.....	iv
 PART I - TECHNICAL PROGRAM DATA	
A. Title-Nomenclature-Program.....	I-1
B. Security Classification	I-1
C. Manpower, Personnel, and Training Principals.....	I-1
D. System Description.....	I-2
E. Developmental Test and Operational Test.....	I-2
F. Aircraft and/or Equipment/System/Subsystem Replaced	I-2
G. Description of New Development	I-2
H. Concepts	I-3
I. Onboard (In-Service) Training.....	I-6
J. Logistics Support	I-7
K. Schedules	I-8
L. Government-Furnished Equipment and Contractor-Furnished Equipment Training Requirements.....	I-8
M. Related NTSPs and Other Applicable Documents	I-8
 APPENDIX A - POINTS OF CONTACT.....	 A-1

AIR DATA TEST SET

LIST OF ACRONYMS

ADTS	Air Data Test Set
AE	Aviation Electrician's Mate
AMIST	Aviation Maintenance In-Service Training
AMTCS	Aviation Maintenance Training Continuum System
AT	Aviation Electronics Technician
CBT	Computer-Based Training
CIN	Course Identification Number
ILSP	Integrated Logistics Support Plan
IMA	Intermediate Maintenance Activity
MATMEP	Maintenance Training Management and Evaluation Program
MOS	Military Occupational Specialty
MTIP	Maintenance Training Improvement Program
NAESU	Naval Aviation Engineering Services Unit
NAMTGD	Naval Aviation Maintenance Training Group Detachment
NAWCADLKE	Naval Air Warfare Center-Aircraft Division Lakehurst
NEC	Navy Enlisted Classification
OJT	On-the-Job Training
STTE	Special Type Test Equipment

AIR DATA TEST SET

PREFACE

This Initial Navy Training System Plan (NTSP) for the Air Data Test Set is an update to the Initial NTSP of February 1997 developed by the Naval Aviation Maintenance Office.

This Initial Navy Training System Plan (NTSP) is a product of the Training Planning Process Methodology, which is the Navy's replacement for the Hardware/Manpower (HARDMAN) Integration Program Methodology. As such, the format of this document is somewhat different than its predecessor, the HARDMAN Concept Document. However, their purposes are the same.

PART I - TECHNICAL PROGRAM DATA

A. TITLE-NOMENCLATURE-PROGRAM

- 1. **Nomenclature-Title-Acronym.** Air Data Test Set (ADTS).
- 2. **Program Element.** TBD.

B. SECURITY CLASSIFICATION

- 1. **System Characteristics** Unclassified
- 2. **Capabilities** Unclassified
- 3. **Functions**..... Unclassified

C. MANPOWER, PERSONNEL, AND TRAINING PRINCIPALS

- OPNAV Principal Official (OPO) Program Sponsor..... CNO (N881C)
- OPO Resource Sponsor CNO (N881C)
- Developing Agency..... NAVAIRSYSCOM (PMA260)
- Training Agency CINCLANTFLT (N721)
CINCPACFLT (N321)
CNET (T252)
COMNAVRESFOR
- Training Support Agency..... NAVAIRSYSCOM (PMA205)
COMNAVRESFOR
- Manpower and Personnel Mission Sponsor CNO (N1)
BUPERS (PERS-4)
- Director of Naval Training CNO (N7)
- Chief of Naval Personnel..... BUPERS (PERS-404C,
PERS-52)
- Commander, Reserve Program Manager COMNAVRESFOR
- Marine Corps Combat Development Command
Manpower Management TFS Division

D. SYSTEM DESCRIPTION

1. Operational Uses. The Air Data Test Set (ADTS) will be used to test altimeters, air speed indicators, and other air data systems on all Navy and Marine Corps aircraft. It will be operated ashore at Navy and Marine Corps air stations; afloat on aircraft carriers and other air capable ships; and at expeditionary airfields and advanced bases utilizing mobile facilities. The ADTS will be operated by organizational level maintenance technicians on the flight line and intermediate level maintenance technicians in a shop environment. The ADTS will be subjected to all climatic conditions.

2. Foreign Military Sales. No Foreign Military Sales or other service procurements are planned for the ADTS at this time.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST. Test and evaluation was shared between the Naval Air Warfare Center-Aircraft Division Lakehurst (NAWCADLKE) and Naval Air Warfare Center-Aircraft Division, Patuxent River. Test and evaluation, including supportability and aircraft testing was completed during second quarter FY98.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. The ADTS is a replacement for the TTU-205C/E.

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The ADTS is capable of delivering regulated pneumatic pressure and vacuum outputs simulating air speed and altitude. The ADTS will be used to test altimeter, air speed indicators, and other air data systems.

2. Physical Description. The ADTS is a portable test set consisting of a main unit, remote unit, pneumatic hose assemblies, and electrical cable assemblies. The unit is enclosed in a rugged waterproof instrument case. The lid compartment provides storage space behind an access panel for the plug-in assemblies. The weight of the ADTS is approximately 82 pounds.

3. New Development Introduction. The ADTS will be introduced as a new production. Delivery is tentatively scheduled to begin in January 1998. The first production units were delivered in January 1998 and will be used for factory training. Initial Operational Capability will be March 1998.

4. Significant Interfaces. NA.

5. New Features, Configurations, or Material. NA.

H. CONCEPTS

1. Operational Concept. The ADTS will be operated ashore and afloat by organizational level Navy Aviation Electronics Technicians (AT), Navy Aviation Electrician's Mates (AE), and Marine Corps Aircraft Electrical Systems technicians. Since the ADTS will be used to support maintenance functions on all Navy and Marine Corps aircraft, the Navy Enlisted Classifications (NEC) codes and Military Occupational Specialty (MOS) associated with ADTS operators will be aircraft specific. The ADTS will be added to the Individual Material Readiness List of each squadron or activity and held in the custody of the local tool room.

2. Maintenance Concept. The ADTS will be maintained under a two-level maintenance concept, intermediate to depot. Repair of subassemblies will be performed by aircraft Intermediate Maintenance Activities (IMA) or depot level maintenance activities as required by the Source, Maintenance, and Recoverability codes. At a minimum, the IMA will be able to fault locate, remove and replace faulty sub-assemblies, and calibrate the ADTS. Depot level maintenance will include all repairs beyond the capability of the IMA and disposition of the ADTS end unit.

a. Organizational. The ADTS will be utilized by organizational level maintenance personnel assigned to avionics work centers (i.e., 210, 220, etc.) in all aircraft squadrons in the Navy. In accordance with the two level maintenance concept explained in the previous paragraph, maintenance functions performed by operators will be limited to pre-operational and post-operational inspection and system built-in self-test.

b. Intermediate. Intermediate level maintenance tasks such as off-equipment repair, troubleshooting defective modules, replacement of defective components within the modules, and verification testing will be performed by intermediate level maintenance personnel assigned to Work Center 670 with NEC 6673 or MOS 6462. Calibration will be required on a one-year cycle at the intermediate level.

c. Depot. Depot level maintenance will consist of repairing failed assemblies, sub-assemblies, and modules turned-in by and beyond the capabilities of IMAs. Calibration will be required on repaired components.

d. Interim Maintenance. Interim maintenance support for the ADTS will be provided by the contractor. A repair of repairables contract will be negotiated with the contractor for repairable items beyond the capability of government repair and calibration for the interim support period. Interim maintenance support will be in place in April 1998.

3. Manning Concept. The manpower requirements for the ADTS are well within the capabilities of the Navy's existing rating structure. Operation and maintenance of the test set will be performed by currently assigned Navy Aviation Electronics Technicians (AT), Navy Aviation Electrician's Mates (AE), and Marine Corps Aircraft Electrical Systems technicians.

a. Estimated Maintenance Man-Hour per Operating Hour/Flight Hour

ADTS OVERALL SYSTEM RELIABILITY

EQUIPMENT	MTBF*	MTTR**	MAXCMT***
ADTS	4898 hours	1.00 hours	0.33 hours

* MTBF is Mean Time Between Failures.

** MTTR is Mean Time To Repair.

*** MAXCMT is Maximum Corrective Maintenance Time.

b. Proposed Utilization. The estimated annual operating requirement hours per unit for the Air Data Test Set is approximately 1000 hours per year.

c. Recommended Qualitative and Quantitative Manpower Requirements

(1) Aircrew. NA.

(2) Enlisted. Since the ADTS will not generate any additional operator tasks as compared to its predecessor, no additional operator personnel will be required. Similarly, the ADTS will not generate any additional maintenance workload as compared to its predecessor. Therefore, no additional maintenance personnel will be required to support the ADTS.

Operation of the ADTS will be accomplished by existing Navy AEs, ATs, and Marine Corps Aircraft Electrical Systems technicians. The NEC and MOS of these operators will vary based on the type of aircraft.

Organic maintenance for the ADTS will be performed by Navy and Marine Corps personnel of the AT rating with NEC code 6673, Field Calibration Activity Technician and Marine Corps personnel with MOS 6462, Aircraft Electrical Systems Technician.

4. Training Concept

a. Initial Training. Initial ADTS operator and maintenance training was required for personnel involved with the test and evaluation effort, Naval Aviation Engineering Services Unit (NAESU) personnel who will be available to provide ADTS training at the squadron or activity level, and Naval Air Maintenance Training Group Detachments (NAMTGD) personnel who will teach the calibration courses. This initial training was conducted by the contractor. The training presentation provided the necessary knowledge and skills required to set up and operate the ADTS and repair it by failure detection, and removal and replacement of boards, modules, or sub-assemblies. An overview of calibration was also presented. A copy of all instructional materials used in teaching the course was provided to each student. Initial training was accomplished in February 1998.

b. Follow-on Training

(1) Operator. Because of its simplicity and similarity to the predecessor test set, follow-on (replacement) ADTS operator training will be via the OJT process at the squadron level.

(2) Maintainer. Within the ADTS two level maintenance concept, failed units will be repaired by IMAs. This maintenance will be performed by Navy and Marine Corps personnel of the AT rating with NEC code 6673, Field Calibration Activity Technician and Marine Corps personnel with MOS 6462, Aircraft Electrical Systems Technician. The training for this maintenance will be provided by OJT and NAESU representatives when necessary. The ADTS calibration requirements will also be carried out by the same IMA personnel. Analysis of the calibration course listed below indicates this training, as is, will provide IMA personnel with the skills required to perform ADTS calibration functions.

Title **Intermediate Level Calibration of Physical/Dimensional Test Measuring Systems**

CIN C-198-2012

CDP 0384

Model Manager ... Naval Technical Training Unit, Keesler Air Force Base

Description Upon completion of this course, Navy and Marine Corps technicians will have sufficient knowledge/theory to perform, under limited supervision, Intermediate Level Calibration of physical/dimensional test and measuring systems in an intermediate maintenance environment.

Location Naval Technical Training Unit, Keesler Air Force Base, Biloxi, Mississippi

Length 122 days (estimated)

RFT date Currently available

Skill identifier AT NEC 6673 or MOS 6462

TTE/TD Basic Electronic testing and measurement equipment

Prerequisites Graduate of AV Class A1 school or equivalent;
Confidential clearance

c. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
-------------------------	--

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
AT 6673	<ul style="list-style-type: none"> ° C-100-2020, Avionics Common Core Class A1 ° C-100-2017, Avionics Technician I Level Class A1
MOS 6462	<ul style="list-style-type: none"> ° C-100-2020, Avionics Common Core Class A1 ° C-100-2017, Avionics Technician I Level Class A1 ° E-198-6036, AN/USM-47 (V) Avionics Test Set (ATS) Technician

d. Training Pipelines. No new pipeline or training tracks will be required to support the ADTS. The ADTS training will not change the course or track lengths for existing intermediate level maintenance training.

I. ONBOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to the New Development. The Maintenance Training Improvement Program (MTIP) will be used to establish an effective and efficient training system that is responsive to fleet training requirements. MTIP is the comprehensive testing of one's knowledge. It consists of a bank of test questions that are managed through automated data processing. The Deputy Chief of Staff for Training will assist in the development of MTIP by providing those question banks (software) already developed by the Navy. MTIP will be implemented in accordance with OPNAVINST 4790.2F, and will be used to establish an effective and efficient training system that is responsive to fleet training requirements. MTIP is a training management tool that, through diagnostic testing, identifies individual training deficiencies at both the organizational and intermediate levels of maintenance. MTIP will allow increased effectiveness in the application of training resources through identification of skill and knowledge deficiencies at the activity, work center, or individual technician level. Refresher training will be concentrated where needed to improve identified skill and knowledge shortfalls.

Aviation Maintenance In-Service Training (AMIST) is intended to support the Fleet training requirements now satisfied by MTIP, and in that sense is the planned replacement. However, it is structured very differently, and will function as an integral part of the new Aviation Maintenance Training Continuum System (AMTCS) that will replace the existing aviation maintenance training structure. AMIST will provide standardized instruction to bridge the training gaps between initial and career training. With the implementation of AMIST, the technician will be provided the training required to maintain a level of proficiency necessary to effectively perform the required tasks to reflect a career progression.

AMTCS redesigns the aviation training process (training continuum), and introduces Computer-Based Training (CBT) throughout the Navy technical training process. The application and adoption of recent advances in computer hardware and software technology have enabled

CBT with its basic elements of Computer Managed Instruction, Computer Aided Instruction, and Interactive Courseware to be integrated into the training continuum and provide essential support for standardizing technical training.

2. Personnel Qualification Standards. NA.

3. Other Onboard or In-service Training Packages. Marine Corps onboard training is based on the current series of MCO P4790.12, Individual Training Standards System and Marine Aviation Training Management Evaluation Program (MATMEP). This program is designed to meet Marine Corps, as well as Navy OPNAVINST 4790.2F, maintenance training requirements. It is a performance-based, standardized, level-progressive, documentable, training management and evaluation program. It identifies and prioritizes task inventories by MOS through a front-end analysis process that identifies task, skill, and knowledge requirements of each MOS. MTIP questions coupled to MATMEP tasks will help identify training deficiencies that can be addressed with remedial training.

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers. The ADTS Contract No. N68335-97-D-0274 was awarded to Druck Inc., Connecticut, in June 1997.

2. Program Documentation. The latest update of the Integrated Logistics Support Plan (ILSP), NAWCADLKE-ILSP 170093005, is January 1998.

3. Technical Data Plan. The Technical Manual Contracts Requirements (TMCR) requires commercially available manuals. Validation of the manuals was in accordance with the TMCR. The manual verification was accomplished by Naval Air Technical Services Facility Quality Assurance personnel utilizing fleet maintainers to ensure and verify that step-by-step procedures accurately met operator and repair requirements. Approved copies of the manual will be provided to each activity receiving the ADTS.

4. Test Sets, Tools, and Test Equipment. One new item of peculiar support equipment will be used to maintain the ADTS. This is called a Special Type Test Set (STTE). The STTE is used with a personal computer which will be procured and provided as a one time issue to the fleet.

5. Repair Parts. Item quantities will be initially determined through the use of a discrete statistical computation model. The model will predict the number of demands for a spare in a given time period to a stated probability. The candidate Support Material Lists will be analyzed considering critical, redundancy, and operational importance in order to provide optimum spares in a cost-effective manner.

6. Human Systems Integration. Established human engineering principles and practices were not used to develop the ADTS system because this is a commercial NDI buy.

K. SCHEDULES

1. Schedule of Events

a. Installation and Delivery Schedules. Current plans are for a production buy of 905 units. A contract was awarded in June 1997 and deliveries of ADTS will begin before the end of second quarter FY98. The current procurement schedule is listed below. Specific allocation of units to specific sites has not yet been determined.

PROCUREMENTS BY FISCAL YEAR				
FY97	FY98	FY99	FY00	FY01
262	143	248	115	137

DELIVERIES BY FISCAL YEAR				
FY97	FY98	FY99	FY00	FY01
0	180	240	240	245

b. Ready For Operational Use Schedule. The ADTS will be ready for use in March 1998.

c. Time Required to Install at Operational Sites. NA.

d. Foreign Military Sales and Other Source Delivery Schedule. NA.

e. Training Device and Delivery Schedule. The ADTS will be required as Technical Training Equipment for the training sites. Arrangements will be made to provide NAMTGD with units for training purposes. Generic “suitcase” type training is accomplished at the Maintenance Training Units for the calibration requirements of the test set.

L. GOVERNMENT-FURNISHED EQUIPMENT AND CONTRACTOR-FURNISHED EQUIPMENT TRAINING REQUIREMENTS. NA

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
P-3 Update III	A-50-8112A/A	PMA240	Approved Mar 94

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
SH-60B Light Airborne Multi-Purpose System	A-50-8508C/A	PMA266	Approved Nov 94
S-3B Aircraft	A-50-8130C/D	PMA244	Draft Sep 94

APPENDIX A - POINTS OF CONTACT

NAME, ACTIVITY, CODE	FUNCTION	TELEPHONE NUMBERS COMMERCIAL, DSN, FAX INTERNET ADDRESS
CAPT C. Nash CNO N880C	Head, AAW Section	(703) 614-2364, DSN 224
CDR Q. Hodge CNO N122	Aviation Manpower	(703) 614-5364, DSN 224
MSGT D. Anderson CNO N889H6	NTSP Manager	(703) 664-7722, DSN 664 (703) 604-6939 (fax)
CAPT O. Fletcher NAVAIRSYSCOM PMA260	Program Manager	(301) 757-6899 fletcherowen@am@nimitz
MAJ V. Wigfall NAVAIRSYSCOM PMA260C36	MALSP SE Program Coordinator	(301) 757-6854, DSN 757 wigfallv.nimitz@navair.navy.mil
AECS L. Uebbing NAVAIRSYSCOM PMA205-3F6	Training Manager	(301) 757-8130, DSN 757 uebbinglb.jfk@navair.navy.mil
CAPT S. Davis BUPERS PERS-4B	Deputy Assistant, Chief Of Military Personnel Distribution	(703) 614-3454, DSN 224
CDR Lineberg BUPERS PERS-404	Head, Aviation Assignment Branch	(703) 693-1370, DSN 223
Mr. E. Scheye CNET T252	Aviation NTSP Manager	(904) 452-4059, DSN 992
LCDR E. Hawkins CINCLANTFLT N721	Aviation NTSP Manager	(757) 445-7853, DSN 565 (757) 445-7849 (fax)
LT Takamnya CINCPACFLT N321	Fleet Training Readiness	(808) 471-6965, DSN 474
Mr. C. Babiowski NAWCADLKE 11X724	Project Manager	(732) 323-1930, DSN 624 624-4029 (fax) babiowsk@lakehurst.navy.mil
Mr. G. Regig NAWCADLKE 48124	System Engineer	(732) 323-4976, DSN 624 reriggm@lakehurst.navy.mil

APPENDIX A - POINTS OF CONTACT

NAME, ACTIVITY, CODE	FUNCTION	TELEPHONE NUMBERS COMMERCIAL, DSN, FAX INTERNET ADDRESS
Mrs. C. Malvasio NAWCADLKE 3144	Logistics Manager	(732) 323-4202, DSN 624 malvasc4@lakehurst.navy.mil
Mr. J. Gunzelman NAWCADLKE 3.4.1	Training Manager	(732) 323-1992, DSN 624 624-4064 (fax) gunzelj4@lakehurst.navy.mil
CDR J. Ellison NAVMAC Code 30	Aviation Manpower	(901) 874-5573, DSN 882
Mr. Phil Szczyglowski NAVAIRSYSCOM 3.4.1	Competency Manager	(301) 757-9182, DSN 757 (301) 342-4723 (fax) szczyglowski_phil%pax8b@mr.nawcad.navy.mil
Mr. Bruce Colby NAVAIRSYSCOM 3.4.1	Front End Analysis Manager	(301) 757-2635, DSN 757 (301) 342-4723 (fax) colby_bruce%pax8b@mr.nawcad.navy.mil
AFCM Marlon Breboneria NAVAIRSYSCOM 3.4.1	Front End Analysis Coordinator	(301) 757-9184, DSN 757 (301) 342-4723 (fax) breboneria_marlon%pax8b@mr.nawcad.navy.mil